

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of )  
Eugene B. LEVICH et al. ) Previous Art Unit: 1752  
Continuation of Serial No. 09/028,932 ) Previous Examiner: M. Angebranndt  
Filed: June 25, 2001 ) Atty. Docket No.: 109289.00193  
For: SILVER HALIDE MATERIAL FOR ) HC:bcj:  
OPTICAL MEMORY DEVICES )  
WITH LUMINESCENT READING )  
AND METHODS FOR THE TREAT- )  
MENT THEREOF )

**PRELIMINARY AMENDMENT**

Hon. Commissioner for Patents  
Washington, D.C. 20231

Sir:

Prior to the examination of the above-referenced continuation application, kindly enter  
the following preliminary amendment:

**IN THE CLAIMS:**

Please cancel Claims 1 to 54, without prejudice to or disclaimer of the subject matter  
therein.

Please add new Claims 55 to 60:

- - 55. A digital optical memory device comprising:

(a) a digital optical memory medium comprising a plurality of layers of a  
luminescent material for an optical digital memory device, each of said plurality of layers  
comprising insoluble microparticles dispersed in a water soluble polymer, said microparticles

having a particle size less than about 0.2 microns, said microparticles having a sorbed luminescent dye, said insoluble microparticles comprising silver microparticles and insoluble metal salts, said silver microparticles being a product of oxidation of silver by an oxidizer selected from the group consisting of  $K_3[Fe(CN)_6]$ ,  $(NH_4)_2S_2O_8$ ,  $KMnO_4$ ,  $CuCl_2$ ,  $FeCl_3$  and quinones, and said oxidation being carried out in a presence of anions selected from the group consisting of  $SCN^-$ ,  $CN^-$ ,  $Cr_2O_7^{2-}$ ,  $WO_4^{2-}$ ,  $[Fe(CN)_6]^{3-}$ , oxalate, citrate and anions of 1-phenyl-5mercaptotetrazole, 2-mercapto-benzothiazole, 2-mercaptobenzoxazole, 2-mercaptobenzimidazole and organic mercapto compounds; and

(b) means for writing data in digital form on said material.

56. The digital optical memory device of claim 55, wherein the means for writing comprises a two-laser system for two-photon writing.

57. The memory device of claim 55, wherein the two-laser system comprises means for two-photon writing of the data in a three-dimensional optical matrix in said material.

58. A digital optical memory device comprising:

(a) a digital optical memory medium comprising a plurality of layers of a luminescent material for an optical digital memory device, each of said plurality of layers comprising insoluble microparticles dispersed in a water soluble polymer, said microparticles having a particle size less than about 0.2 microns, said microparticles having a sorbed luminescent dye, said insoluble microparticles comprising silver microparticles and insoluble metal salts, said silver microparticles being a product of oxidation of silver by an oxidizer selected from the group consisting of  $K_3[Fe(CN)_6]$ ,  $(NH_4)_2S_2O_8$ ,  $KMnO_4$ ,  $CuCl_2$ ,  $FeCl_3$  and

quinones, and said oxidation being carried out in a presence of anions selected from the group consisting of  $\text{SCN}^-$ ,  $\text{CN}^-$ ,  $\text{Cr}_2\text{O}_7^{2-}$ ,  $\text{WO}_4^{2-}$ ,  $[\text{Fe}(\text{CN})_6]^{3-}$ , oxalate, citrate and anions of 1-phenyl-5mercaptotetrazole, 2-mercapto-benzothiazole, 2-mercaptobenzoxazole, 2-mercaptobenzimidazole and organic mercapto compounds, at least one of said plurality of layers having data stored in digital form therein; and

(b) means for reading said data in said digital form from said material.

59. A method of reading digital data comprising:

(a) providing a digital optical memory medium, the medium comprising a plurality of layers of a luminescent material for an optical digital memory device, each of said plurality of layers comprising insoluble microparticles dispersed in a water soluble polymer, said microparticles having a particle size less than about 0.2 microns, said microparticles having a sorbed luminescent dye, said insoluble microparticles comprising silver microparticles and insoluble metal salts, said silver microparticles being a product of oxidation of silver by an oxidizer selected from the group consisting of  $\text{K}_3[\text{Fe}(\text{CN})_6]$ ,  $(\text{NH}_4)_2\text{S}_2\text{O}_8$ ,  $\text{KMnO}_4$ ,  $\text{CuCl}_2$ ,  $\text{FeCl}_3$  and quinones, and said oxidation being carried out in a presence of anions selected from the group consisting of  $\text{SCN}^-$ ,  $\text{CN}^-$ ,  $\text{Cr}_2\text{O}_7^{2-}$ ,  $\text{WO}_4^{2-}$ ,  $[\text{Fe}(\text{CN})_6]^{3-}$ , oxalate, citrate and anions of 1-phenyl-5mercaptotetrazole, 2-mercapto-benzothiazole, 2-mercaptobenzoxazole, 2-mercaptobenzimidazole and organic mercapto compounds, at least one of said plurality of layers having data stored in digital form therein; and

(b) reading said data in said digital form from said material.

60. A method of forming a digital optical memory medium, the method comprising:

simultaneously extruding, from a multi-slit filler, thin layers of photographic emulsion and between them thick layers of a silver halide free polymer to a substrate to form a multi-layer material;

exposing said multi-layer material to light;

developing and fixation of said multi-layer material to form silver particles from the exposed silver halide;

oxidation of the silver particles to form the insoluble salt particles by an oxidizer selected from the group consisting of  $K_3[Fe(CN)_6]$ ,  $(NH_4)_2S_2O_8$ ,  $KMnO_4$ ,  $CuCl_2$ ,  $FeCl_3$  and quinones, said oxidation being carried out in a presence of anions selected from the group consisting of  $SCN^-$ ,  $CN^-$ ,  $Cr_2O_7^{2-}$ ,  $WO_4^{2-}$ ,  $[Fe(CN)_6]^{3-}$ , oxalate, citrate and anions of 1-phenyl-5mercaptotetrazole, 2-mercapto-benzothiazole, 2-mercaptobenzoxazole, 2-mercaptobenzimidazole and organic mercapto compounds;

treating the multi-layer material with luminescing dye and allowing the luminescing dye to be sorbed onto the particles; and

writing data in digital form onto said medium. - -

#### **REMARKS**

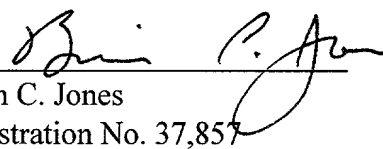
This amendment cancels all the originally filed claims 1 - 54 in the parent application, Serial No. 09/028,932. In their stead, claims 55-60 are presented featuring a digital optical memory medium comprising a plurality of layers. These claims were presented as Claims 63, 64, 65, 66, 70 and 71 in an amendment filed on May 30, 2001 in the parent application.

Multilayer materials having a plurality of layers are disclosed throughout the originally filed specification and claims and no new matter has been added by their resubmittal in this continuation application.

Please charge any shortage or credit any overpayment of fees to BLANK ROME COMISKY & McCAULEY LLP, Deposit Account No. 23-2185 (0698.056). In the event that a petition for an extension of time is required to be submitted herewith or in the parent application and in the event that a separate petition does not accompany this response, applicant herewith petitions under 37 C.F.R. §1.136(a) for an extension of time for as many months as are required to render this submission timely. Any fee due is authorized above.

Respectfully submitted,

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